Space Weather Forecast

Issued on Saturday, 08 July 2023 at 13:09 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of R1/R2 Radio Blackouts throughout.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity is Low, with only minor Common-class flares observed in the past 24 hours. There are nine numbered sunspot regions on the visible disc. The largest region is in the southeast quadrant, but currently appears stable. The second largest and most magnetically complex sunspot region is located in the northern hemisphere, near the meridian line. Despite its magnetic complexity it appears to be relatively stable at present. No Earth-directed CMEs (Coronal Mass Ejections) have been observed in available imagery in the past 24 hours.

Solar Wind / Geomagnetic Activity: The solar wind as observed at L1, was predominantly at slightly elevated levels, and on occasion reached elevated levels, with a peak of around 520km/s observed at 07/1913UTC, before declining to around 410km/s at present. Total magnetic field strength was at moderate levels to start, declining steadily to current weak levels. The important north-south component, Bz, varied weakly throughout. Geomagnetic activity has been largely Quiet to Unsettled (Kp 0-3), with an Active (Kp4) interval observed at 07/2100-0000 UTC.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Low to Moderate solar activity is forecast, with a chance of Moderate flares. There is a slight risk of a strong flare.

Solar Wind / Geomagnetic Activity: The CME which left the Sun on 4 July gave a glancing blow at Earth on 7 July, which has now likely passed Earth, with little further influence expected. Therefore the solar wind is expected to start at slightly elevated day 1 (08 July), before a steady decline to ambient levels in the coming days.

Geomagnetic activity is forecast to be mostly Quiet to Unsettled (Kp 0-3), with a slight chance of an Active (Kp4) interval during day 1 (08 July) due to waning effects of glancing CME yesterday and coronal hole fast wind.

Energetic Particles / Solar Radiation: Solar radiation has a slight but increasing chance of reaching the S1/Minor Storm threshold through the period.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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